

## REMARKS/ARGUMENTS

Claims 1-6, 8-11, 14, 15, 19-22, 24-33, and 41-49 are currently pending in the present patent application.

In an Office Action mailed February 14, 2006, the Examiner rejected claims 2-6, 8, 21, 24-31, 41-44, and 46 under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim subject matter which applicant regards as the invention. With regard to claim 2, the Examiner states it is "unclear as to how and what is meant by varying an etching voltage between two physical locations (plasma and wafer)." A voltage is always defined "between two physical locations." A supply voltage line and a ground plane, for example. A voltage is inherently a differential signal and not an absolute signal. Thus, in claim 2 the etching voltage is the voltage between the plasma and the wafer.

The Examiner asks "how one can compare a voltage to two physical locations." From this comment, the Examiner appears to think there must be a first voltage defined between some reference point and the plasma and a second voltage between the reference point and the wafer. If this were the case then the language of claim 2 may be confusing, but this is not the case and this is not what the claim sets forth. Claim 2 recites "varying an etching voltage between a plasma ... and said wafer." The voltage is the voltage between the wafer and the plasma. If the Examiner is still not clear on this concept then perhaps a telephone interview with the undersigned would be helpful to clarify this matter and eliminate wasting any more time on this claim language. These same comments apply to claims 24 and 46. In sum, claims 2, 24, and 46 satisfy Section 112, as do claims 3-6 and 8 which depend from claim 2 and claims 25-31 and 41-44 which depend from claim 24.

With regard to claim 21, the Examiner states it is "unclear as to the structural relationship between the stop layer[,] the resist layer and the trench and/or the depression." Claim 21 has been amended to recite the depression is formed through a stop layer formed over the substrate and a resist layer formed on the stop layer, and to recite that the first polymeric film is formed on walls defined by the depression, stop layer, and resist layer. These amendments eliminate any deficiencies of claim 21 under Section 112 regarding the structural relationship between the stop layer, resist layer, and depression.

With regard to claim 24, the Examiner maintains his rejection of this claim under Section 112 for being unclear as to what is meant by removing portion of the substrate by parts in series and depositing a second polymeric film on the walls by portions in series. Claim 24 has been amended to recite "removing portions of the substrate in series, each portion being removed responsive to one of the etching voltages in the series of etching voltages" and to recite "depositing portions of a second polymeric film on the walls in series, each portion in the series of deposited portions corresponding to one of the etching voltages in the series of etching voltages."

As discussed in prior amendments, paragraphs 25-27, for example, of the present application clearly describe the plasma etching process. Amended claim 24 recites portions of the substrate are removed one after another or in series, with each portion being removed responsive to one of the etching voltages in the series of etching voltages. The amended claim also recites that portions of a second polymeric film are deposited on the walls one after another or in series, each portion in the series of deposited portions being deposited responsive to one of the etching voltages in the series of etching voltages. In the Office Action, the Examiner (page 11) states "the term 'series' can not be explicitly interpreted without ambiguity." The undersigned does not really understand what this means. Is the Examiner suggesting the word "series" cannot be used in patent claims? While the undersigned has not done a search to identify claims including the word series, most certainly such claims exist. If the Examiner is then saying the use of these claims is still unclear, the undersigned is equally perplexed. The detailed discussion set forth in prior amendments regarding an embodiment of the etching and deposition process makes it clear that the portions being removed or deposited are removed or deposited one after another or in series as the voltage is varied over time.

The amended language of claim 24 clarifies any deficiencies under Section 112 and will be understood by those skilled in the art when read in view of the specification. If the Examiner still has issues with the language of claim 24, or claim 21, then, as mentioned with reference to claim 2, perhaps a telephone interview with the undersigned would be helpful to clarify this matter and eliminate wasting any more time on this claim language.

In the Office Action, the Examiner rejected claims 1-6, 8-11, and 14-15 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,807,789 to Chen *et al.* ("Chen") in view of U.S. Patent No. 6,287,938 to Lee *et al.* ("Lee").

Amended claim 1 recites a process for forming trenches with an oblique profile and rounded top corners. The process includes, through a first polymerizing etch, forming in a semiconductor wafer depressions delimited by rounded top corners and through a second polymerizing etch, opening trenches at said depressions. The second polymerizing etch is performed by varying plasma conditions around the semiconductor wafer to form trenches with oblique profiles having a substantially constant slope throughout substantially an entire sidewall of each trench.

The Chen patent has already been discussed in detail in prior amendments. Chen varies RF power and pressure of the plasma to obtain trenches having the desired profile, namely having top and bottom rounded corners and a tapered profile. Plasma conditions are not varied in Chen to form trenches with a substantially constant slope through substantially the entire sidewall of the trench, as admitted by the Examiner. Chen is directed to forming trenches having the described profile of rounded top and bottom corners and a constantly varying slope or tapered profile therebetween. As described in Lee, column 2, lines 20-39, Lee is directed to forming trenches with a rounded upper portion 2 having a vertical middle portion 4 and a rounded bottom portion 6 as shown in Figure 1 of Lee. The vertical middle portion 4, as its name implies, "becomes close to the vertical sidewall." See column 2, lines 54-55. This is precisely the structure Chen sets out to replace or improve over. See Chen, column 1 lines 20-28, discussing the "gap filling" problems of such steep sidewall structures. The figures of Lee viewed in the context of the corresponding structure described in Lee does not show or suggest anything but vertical middle portions 4, and does not disclose or suggest the recited constant slope portions. The portions 4 are said to be close to a vertical sidewall, and even if not perfectly vertical there is no disclosure or suggestion in Lee of these portions having a constant slope.

In sum, there is simply no suggestion of modifying the profile of Chen with the profile asserted by the Examiner to be disclosed in Lee. In fact, Lee expressly teaches away from such a combination since the structure described in Lee is the structure described in the background of Chen and over which Chen sets out to improve. Moreover, the figures of Lee do not depict the structure asserted by the Examiner when read in view of the description of Lee. For all these reasons, amended claim 1 is allowable.

With regard to claim 2, neither Chen nor Lee discloses or suggests varying an etching voltage between a wafer and a surrounding plasma. As discussed in prior

amendments, Chen controls etching via the gas pressure and RF power, see, e.g., Abstract line 7, which is different than controlling the plasma-to-wafer voltage. The plasma-to-wafer voltage is not mentioned at all in Chen. Lee also discloses variations of RF power and pressure and does not disclose or suggest voltage variations between the plasma and wafer. Accordingly, dependent claims 2, 24, and any other dependent claims that recite control of the etching voltages are allowable over Chen and Lee for these additional reasons.

In view of the above remarks in conjunction with the reasons set forth in prior amendments, independent claims 19 and 45 are allowable for the reasons previously set forth. All dependent claims are allowable for at least the same reasons as the associated independent claim, and due to the additional limitations added by each of these claims.

The present patent application is in condition for allowance. Favorable consideration and a Notice of Allowance are respectfully requested. Should the Examiner have any further questions about the application, Applicant respectfully requests the Examiner to contact the undersigned attorney at (425) 455-5575 to resolve the matter. If any need for any fee in addition to that paid with this response is found, for any reason or at any point during the prosecution of this application, kindly consider this a petition therefore and charge any necessary fees to Deposit Account 07-1897.

Respectfully submitted,

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